

■ **Original Article**

Prevalence of anaemia among the male population aged 60 years and above in rural area of Paschim Medinipur, West Bengal, India

S Maiti^{1,3}, A Ghosh¹, KM Ali¹, K Jana¹, D Ghosh^{1,2,3} S Paul^{2,3}

¹Department of Bio-Medical Laboratory Science & Management, Vidyasagar University, West Bengal, India, ²Nutrition & Dietetics Unit, Dept. of Bio-Medical Laboratory Science & Management, Vidyasagar University, West Bengal, India, ³Rural Research Institute of Physiology & Applied Nutrition (RRIPAN), West Bengal, India

Abstract

Background: Anaemia is one of the most common public health problems of older population especially in developing countries. **Objective:** To determine the prevalence and type of anaemia present among the older people in rural area of Paschim Medinipur, West Bengal. **Methods:** A cross-sectional study was undertaken on 544 older male, Subject aged 60 to 84 years from Paschim Medinipur, West Bengal. Personal details were collected in each case, after which height, weight, body mass index (BMI) and blood haemoglobin level were measured according to the standard protocol. Anaemia was classified as per the World Health Organisation (WHO) grading criteria. **Results:** The overall prevalence of anaemia among the older male was 89.52%. The majority (256) (47.05%) showed mild anaemia, while moderate anaemia was recorded in 212 (38.97%) and 19 (3.49%) subjects, had severe anaemia. The prevalence of anaemia was more (65.62%) in individuals, having low BMI than normal. **Conclusion:** The results showed high frequency of anemia in the studied population. There is a need for immediate nutritional intervention programs to be implemented among the rural older male subjects.

Keywords: anaemia, CED, BMI, haemoglobin

Introduction

On the basis of global scenario, in 2000 there were 600 million people aged 60 or over, and it is estimated that this figure will double by 2025, and more than triple to 2 billion by 2050.¹ Smith (2000)² found the prevalence of anaemia to increase sharply after the age of 60 years. So, it is important to find out and understand the significance of common medical problems in older people. Anemia may be one such problem. The problem is much more in rural than the urban areas.³

Address for correspondence

Dr Shyamapada Paul
Director, Rural Research Institute of Physiology & Applied Nutrition (RRIPAN)
'Gitanjali', Dr. Nilay Paul Road, Midnapore – 721 101,
West Bengal, India
Email: paul_shyamapada@rediffmailcom

Anemia is defined as a condition characterized by reduction of the concentration of hemoglobin in blood below the normal level. It is the common hematological abnormalities in older population and its prevalence arises with the advancement of age. According to the World Health Organization (WHO), anemia (hemoglobin level less than 13 g per dL [130 g per L] in men and less than 12 g per dL [120 g per L] in women), a large study found that the corrected annual incidence of anemia increased steadily with advancement of age. In general, the level of hemoglobin is found to be lowering in older than young people. The exact causes behind this are not cleared. It is unclear whether hemoglobin falls in older people because this is a feature of normal ageing, or whether it is always pathological, even if underlying conditions

cannot be identified. In an individual patient it may be that some decline in hemoglobin occurs as part of normal ageing, but that disease may also contribute to the development of anemia.⁴

The prevalence of anemia in elderly individuals aged 65 years or older is around 10% and increases with age to above 20% in subjects aged 85 years or older.^{5,6} From 65 to 69 years of age, the incidence of new-onset anemia was 6 percent in men and 4 percent in women. In persons 85 years and older, the annual incidence rose to 14 percent in men and 13 percent in women.⁷ Multiple studies demonstrate that anemia is an independent risk factor for increased morbidity and mortality, and decreased quality of life in community-dwelling older persons.⁸ So, study of anemia among the older people in the different zone of our country is required in connection with to find out the epidemiological scenario of this disorder. In this respect, this study was undertaken to determine the prevalence and main types of anemia present among older people in rural area of Paschim Medinipur, West Bengal. This report is to the best of our knowledge, the first study of anemia among older people in rural area of West Bengal, India

Methods

Study population

Cross sectional community based study was carried out in the month of September, 2010 in rural area of 11 blocks, Sankrile, Gopi-I, Gopi-II, Nayagram, Binpur-I, Binpur-II, Jamboni, Midnapore Sadar, Salboni, Garbeta-II in Paschim Medinipur district, West Bengal, India. The relevant data were collected from target population belong to low socio economic group. Older male subjects were visited (at ages 60-84 years) at their place of residence to participate in this study and the total sample size is 544. The geographical location is latitude 22°70' north and longitude 86°59' east. This area has uniqueness in terms of demographic and socioeconomic characteristics.

Hematological assessment

Capillary blood was collected from each participant using a finger-prick method to extract three drops of

blood from the left middle finger. The first and second drops of blood were wiped away. The third drop was used immediately for testing Hemoglobin level. The measurement of hemoglobin level was conducted by using a Hemocue Hb analyser.

Anthropometric study

Height and weight of each subject were measured using standard protocol as recommended by WHO.⁹ Height and weight were recorded up to the nearest 0.1 cm and 0.5 kg, respectively. BMI was computed by the following standard equation.

$BMI = \text{weight (kg)} / \text{height (m}^2\text{)}$.

Nutritional status was evaluated based on BMI guidelines of WHO (1995).

The different cut-off points were used here as follows:

Chronic energy deficiency when $BMI = < 18.5$

Normal when $BMI = 18.5-24.9$

Overweight when $BMI = \geq 25.0$.

Assessment of anaemia

Anaemia was categorized according to the hemoglobin levels in to mild (10.0-10.9 g /dl), moderate (8.0-9.9 g/dl) and severe (< 8.0 g/dl).

Ethical consideration

Ethical permission was obtained from Vidyasagar University and local community leaders, respectively, before commencement of the study. The study protocol was fully explained to the subjects and consent was obtained prior the commencement of the study.

Results

There are 544 older male in rural population participating in this study having age group 60-84 years. Age group wise anthropometric variable along with blood hemoglobin level of participants are depicted in Table 1. The overall height, weight and BMI were 166.55 cm, 43.65 kg and 16.90 kg/m.² BMI was increased up to age group of 65-69 years with the advancement of age. But hemoglobin levels were decreased with the advancement of age. Mean blood haemoglobin level was 9.96 g/dl.

Table 1: Age group wise mean height, weight, BMI and haemoglobin among rural older male

| Age Groups (in years) | No. | Height (cm) Mean±SD | Weight (kg) Mean±SD | BMI (kg/m ²) Mean±SD | Hb (g/dl) |
|-----------------------|-----|------------------------|------------------------|-------------------------------------|-------------|
| 60-64 | 141 | 161.12±6.26 | 44.87±7.68 | 17.27±2.69 | 10.19±0.887 |
| 65-69 | 136 | 160.72±7.06 | 45.46±8.73 | 17.53±2.73 | 10.15±0.69 |
| 70-74 | 152 | 160.10±5.99 | 41.73±7.68 | 16.27±2.80 | 9.71±0.87 |
| 75-79 | 65 | 159.61±5.87 | 42.25±6.45 | 16.57±2.39 | 9.63±0.88 |
| 80-84 | 50 | 161.05±5.31 | 42.94±8.32 | 16.50±2.67 | 9.54±1.01 |
| Overall | 544 | 160.55±6.3 | 43.65±8.04 | 16.90±2.74 | 9.96±0.88 |

Table 2 showed age group wise prevalence of anaemia and their different grads. The overall prevalence of anaemia was 89.52% where as 47.05%, 38.97%, 3.49% belongs to mild, moderate and severe groups of anaemia respectively. The

heights frequency (98.02%) of anaemia observed among the age group 70-74 years whereas age group of 60-64 years indicates lowest frequency. Only 10.47% of older male in present study area fall in normal.

Table 2: Age group wise prevalence of anaemia among rural older male

| Characteristic | No. | Status of anaemia | | | | Normal |
|----------------|-----|-------------------|-------------|-----------|-------------|------------|
| | | Mild | Moderate | Severe | Total | |
| 60-64 | 141 | 73 (51.77) | 44 (31.20) | 2 (1.41) | 119 (84.39) | 22 (15.60) |
| 65-69 | 136 | 66 (48.52) | 50 (36.76) | 1 (0.735) | 117 (86.02) | 19 (13.97) |
| 70-74 | 152 | 72 (47.36) | 69 (45.39) | 8 (5.26) | 149 (98.02) | 3 (1.97) |
| 75-79 | 65 | 27 (41.53) | 26 (40) | 3 (4.61) | 56 (86.15) | 9 (13.84) |
| 80-84 | 50 | 18 (36) | 23 (46) | 5 (10) | 46 (92) | 4 (8) |
| Overall | 544 | 256 (47.05) | 212 (38.97) | 19 (3.49) | 487 (89.52) | 57 (10.47) |

The weighted percentage along with different categories of anaemia by body mass index is presented in Table 3. It indicates in case of low BMI (less than 18.5 kg/m²), 65.62% of subjects were

found to be anaemic than those subjects with normal BMI between 18.5 and 24.9 kg/m² (22.42%). Whereas chance of anaemia is much more less in case of over-weight subjects (1.47%) who fall in category of high BMI (≥ 25 kg/m²).

Table 3: Weighted percentages of older male with different grades of anaemia by body mass index

| BMI (kg/m ²) | Status of anaemia | | | | Normal | Overall |
|--------------------------|-------------------|-------------|-----------|-------------|------------|-------------|
| | Mild | Moderate | Severe | Total | | |
| <18.5 | 179 (45.54) | 162 (41.22) | 16 (4.07) | 357 (65.62) | 36 (9.16) | 393 (72.24) |
| 18.5-24.9 | 71 (50) | 48 (33.80) | 3 (2.11) | 122 (22.42) | 20 (14.08) | 142 (26.10) |
| ≥ 25 | 5 (55.55) | 3 (33.33) | - | 8 (1.47) | 1 (11.11) | 9 (1.65) |
| Total | 255 (46.87) | 213 (39.15) | 19 (3.49) | 487 (89.52) | 57 (10.47) | 544 (100%) |

Discussion

Anaemia continues to be a major public health problem at all ages worldwide. It is common in older adults and is an independent predictor for increased

morbidity and mortality in several disease states.¹⁰ We conducted a community based study to determine the prevalence of anaemia among older male.

In the present study, BMI levels were increased up to age groups of 65-69 years than decline whereas mean blood Hb level showed a decline with advancing of age. Present study showed 46.87% subjects were mild anaemic, 39.15% were moderate anaemic and 3.49% were severe anaemic whereas 10.47% subjects had normal. According to WHO if the prevalence of anemia at community levels is more than 40%, it is considered as problem of high magnitude.³

Another study carried out in the southern part of India reported a much higher prevalence of anaemia (82.9%) in the 60 years and above age group.¹¹ But the study showed higher prevalence of anaemia (89.52%) than earlier study. This difference may be explained by the structure of the geographical and socio-economical variation and it is the fact that the prevalence of anaemia is high in the eastern zone of India.¹² The present study area is one of the poorest areas. In this area lack of required food is one of cause of anemia.

This study focussed that the prevalence of anaemia was more (65.62%) in individual having low BMI than normal. One of the previous studies has shown a significant association of anaemia was seen with low BMI, this study also supports our findings.¹³ The study had some limitations. The causes of anaemia were not properly identified. It might be mostly due to chronic disease and insufficient micronutrient intakes such as iron, vitamin B12 and/or folate. For the future work, nutritional status of micronutrients must be evaluated either by dietary and biochemical analyses and strategies to improve the nutritional and health status of the rural older population must be developed.

Conclusion

Anaemia in older male subjects is a severe public health problem in underprivileged areas of West Bengal. There is a need for immediate nutritional intervention program to be implemented among the rural older male.

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